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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,140	12/31/2003	Don J. Nguyen	42P17636	7909

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EXAMINER
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SHERMAN, STEPHEN G

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/750,140	Applicant(s) NGUYEN ET AL.	
	Examiner Stephen G. Sherman	Art Unit 2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 November 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4 and 5 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-17 and 20-27 is/are rejected.
- 7) ☒ Claim(s) 18-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This office action is in response to the amendment filed the 28 November 2006.

Claims 1-27 are pending.

### ***Response to Arguments***

2. Applicant's arguments filed with respect to claims 1-3, 6-17 and 20-27 have been fully considered but they are not persuasive.

The applicant argues on page 12, starting with the second paragraph that the brightness setting for the display in the invention is something different and distinct from a feedback signal, and that Lin does not teach "a controller...to operate the inverter component...based at least in part on a brightness setting for the display." The examiner respectfully disagrees. As explained below in the examiner's rejection, the applicant's disclosure explains that "In general, embodiments of the present invention switch a backlight voltage inverter between modes of operation based on a brightness level of the backlight," while Figure 8 further illustrates this by showing step 820, which as described on page 9, lines 3-7, compares a current brightness level of the backlight to the threshold to determine which mode the inverter should operate in. Since the combination of Lin et al. and Esteves et al. teach of changing the mode of operation based upon the brightness level of the backlight, the examiner has interpreted that since the brightness of the display is closely related to the input driving power level of the

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backlight, if the continuous or burst mode is selected based on the brightness level of the backlight, i.e. driving power level of the backlight, then the mode is also switched based at least partly on the brightness setting for the display, meaning that the combination of the references does teach the claimed limitations.

### ***Claim Objections***

3. Claims 15-21 are objected to because of the following informalities:

The claims recite "A *machine* readable medium...thereon *machine* executable instructions." In order to comply with the guidelines set forth, the examiner suggests that it would be more appropriate to claim "A *computer* readable medium...thereon *computer* executable instructions," since the machine would have to be a computer anyways to perform the instructions as claimed anyways. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-3, 6-17 and 20-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 8, 15 and 22 all recite the limitation of "receiving an indicator of a brightness setting for a display...selecting either a continuous mode of operation for the voltage inverter or a burst mode of operation for the voltage inverter based at least in part on the indicator." This subject matter is not enabling because the specification only states on page 4, lines 29-31 that "That is, embodiments of the present invention can select a mode of operation for a backlight inverter based at least in part on the brightness setting of the display," however, there is no explanation to enable one of ordinary skill in the art to understand how this is being accomplished. The specification only describes changing modes based on brightness levels NOT brightness settings, as indicated on page 8, lines 25-26 that states: "In general, embodiments of the present invention **switch a backlight voltage inverter between modes of operation based on a brightness level of the backlight.**" Figure 8 further illustrates this by showing step 820, which as described on page 9, lines 3-7, compares a **current brightness level of the backlight** to the threshold to determine which mode the inverter should operate in. There is insufficient explanation as to how the mode of operation is changed based upon brightness settings of the display since the specification only describes changing the modes based upon the brightness level of the backlight. For examination purposes, the examiner will assume since as stated in the specification that the brightness setting of a display is closely related to the brightness of a backlight, that it

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what is meant by the mode of operation being selected based in part on the brightness setting of the display is that since the two are closely related if the mode is selected based on the brightness level of the backlight it is also selected based partly on the brightness setting of the display.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1-2, 6-7, 9-11, 13-14, 22-24, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US 6,936,975) in view of Esteves et al. (US 6,724, 174).

***Regarding claims 1, 8, and 22***, Lin et al. disclose a method, apparatus and system comprising:

- a cold cathode florescent lamp (CCFL) in the display (see Fig. 3A);
- an inverter component for a backlight or CCFL (Fig. 4 shows a standard voltage inverter circuit),
- a controller for the inverter component (Fig. 4, the inverter controller),

receiving an indicator of a brightness setting for the display (see col. 4, lines 57-60, where there is voltage and current feedback to indicate the existing load which is also an indicator of the brightness level. The examiner understands that since the brightness of the display is closely related to the input driving power level of the backlight, if an indicator is received regarding the brightness level of the backlight, i.e. driving power level of the backlight, then the indicator also relates to the brightness setting for the display.),

said display having a backlight driven by a voltage inverter (Fig. 5), and Lin further teaches operating in either a burst mode or continuous mode (see col. 4, lines 43-46).

Lin et al. fail to explicitly teach selecting either a continuous mode of operation for the voltage inverter or a burst mode of operation for the voltage inverter based at least in part on the indicator.

Esteves et al. disclose a power supply regulator that selects either a continuous mode of operation for the voltage inverter or a burst mode of operation for the voltage inverter based at least in part on the indicator (see col. 5, lines 4-29, where indicator of the load level is used to switch between a continuous or burst mode, and see col. 3, lines 29-30, where this method may be utilized in any regulator that uses burst mode operation. As explained above, the examiner understands that since the brightness of the display is closely related to the input driving power level of the backlight, if the continuous or burst mode is selected based on the brightness level of the backlight, i.e.

driving power level of the backlight, then the mode is also switched based at least partly on the brightness setting for the display.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Esteves et al. in the circuit of Lin et al. in order to provide higher efficiency and reduce transistor gate charge losses at light lamp loads.

**Regarding claim 2**, Lin et al. and Esteves et al. disclose the method of claim 1.

Esteves et al. also disclose a method further comprising:

comparing the brightness setting to a threshold brightness level (see col. 6, lines 50-64, where the mode voltage, which corresponds to the existing load level, is compared to the threshold voltage  $V_{th}$ );

if the brightness setting is above the threshold brightness setting, setting the indicator to indicate a high brightness setting (see col. 6, lines 45-59, where a high level is indicated if the voltage is above the threshold); and

if the brightness setting is below the threshold brightness setting, setting the indicator to indicate a low brightness setting (see col. 6, lines 60-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the threshold of Esteves et al. in the invention taught by the combination of Lin et al. and Esteves et al. in order to have an automatic method of switching between a continuous mode and a burst mode.



**Regarding claim 6**, Lin et al. and Esteves et al. disclose the method of claim 1.

Lin et al. also disclosed a method comprising:

adjusting the brightness setting for the display based on at least one of a user input and an operating system control (see col. 4, lines 62-64, where the inverter controller inherently corresponds to operating system control).

**Regarding claim 7**, Lin et al. and Esteves et al. disclose the method of claim 1.

Esteves also disclose a method wherein selecting either the continuous mode or the burst mode comprises:

selecting the continuous mode if the indicator indicates a brightness setting above a threshold (see col. 6, lines 45-59, where a high level is indicated if the voltage is above the threshold); and

selecting the burst mode if the indicator indicates a brightness setting below the threshold (see col. 6, lines 60-64).

**Regarding claims 9 and 23**, Lin et al. and Esteves et al. disclose the apparatus of claim 8 and the system of claim 22.

Lin et al. also disclose an apparatus and system wherein the inverter component comprises:

a first switch (Fig. 4, switch 34A) coupled between a first node and a second node (Fig. 4), said first node to couple to a voltage source (Fig. 4, the node above 34A is connected to a high voltage source H.V.);

a second switch (Fig. 4, switch 36A) coupled between the second node and a third node (Fig. 4), said third node to couple to a ground (Fig. 4);

a third switch (Fig. 4, switch 34B) coupled between the first node and a fourth node (Fig. 4);

a fourth switch (Fig. 4, switch 36B) coupled between the third node and the fourth node (Fig. 4);

a first capacitive element coupled between the second node and a fifth node (Fig. 4, the capacitor is between node A, which is the second node and the right side of the primary of the transformer, which is the fifth node);

a transformer having a first coil coupled between the fourth node and the fifth node (Fig. 4 shows that the first coil is coupled between the fourth node shown as node B and the fifth node which is the node on the other side between the coil and the capacitor.), and

a second coil to couple a sixth node to a first terminal of the backlight (Fig. 4, the secondary side of the transformer couples a sixth node to a first terminal of the backlight); and

a second capacitive element to couple the sixth node to a second terminal of the backlight (Fig. 4, the capacitor beside the LCD panel couples the sixth node from the secondary side of the transformer to a second terminal of the backlight).

**Regarding claim 10**, Lin et al. and Esteves et al. disclose the apparatus of claim

Lin et al. also disclose an apparatus wherein the first, second, third, and fourth switches comprise field effect transistors (FETs) (Fig. 4, switches 34A, 36A, 34B, and 36B are shown as transistors).

**Regarding claims 11 and 24**, Lin et al. and Esteves et al. disclose the apparatus of claim 9 and the system of claim 23.

Lin et al. also disclose an apparatus/system wherein the controller is to open and close the first, second, third, and fourth switches (Fig. 4).

**Regarding claims 13 and 26**, Lin et al. and Esteves et al. disclose the apparatus of claim 9 and the system of claim 23.

Lin et al. also disclose an apparatus/system wherein, in the burst mode, the first, second, third, and fourth switches are turned off during a resting duration (see Fig. 4, where it is inherent that during a resting duration the switches must be turned off).

**Regarding claim 14 and 27**, Lin et al. and Esteves et al. disclose the apparatus of claim 8 and the system of claim 22.

Lin et al. also disclose an apparatus wherein the controller comprises:  
an indicator pin to receive an indication of the brightness setting of the display (Fig. 4, and see col. 4, lines 58-61, where the feedback line to the inverter controller indicating the current lamp load is equivalent to an indicator pin on the controller).

5. Claims 3, 15-17, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US 6,936,975) in view of Esteves et al. (US 6,724, 174) and further in view of Weindorf (US 2002/0118182).

**Regarding claim 3**, Lin et al. and Esteves et al. disclose the method of claim 2.

Lin et al. and Esteves et al. fail to teach that the threshold brightness level comprises 60 candela per meter squared.

Weindorf does teach a display where a threshold brightness level comprises 60 candela per meter squared (see para. 66, where 60 NITS is given as an upper level for nighttime display luminance).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Weindorf in the method taught by the combination of Lin et al. and Esteves et al. in order to have a threshold level set at an upper level of a nighttime luminance range, which in turn corresponds to a range of values for when low power is required.

**Regarding claims 15-17, 20-21**, Lin et al., Esteves et al. and Weindorf disclose the method of claims 1-3, and 6-7.

Weindorf also discloses that a method for controlling a backlight can be implemented on a machine readable medium having stored thereon machine executable instructions (see para. 60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Weindorf in the method discussed in claims 1-3, and 6-7 above in order to have a software implementation of the method which is well-known in the art.

6. Claims 12 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US 6,936,975) in view of Esteves et al. (US 6,724, 174) and further in view of Yu (US 6,750,842).

***Regarding claims 12 and 25,*** Lin et al. and Esteves et al. disclose the apparatus of claim 8 and the system of claim 22.

Lin et al. and Esteves et al. fail to explicitly teach that the first and fourth switches are switched in phase, the second and third switches are switched in phase, and the first and fourth switches are switched 180 degrees out of phase with the second and third switches.

Yu discloses a backlight control circuit for a full-bridge circuit first and fourth switches are switched in phase, the second and third switches are switched in phase, and the first and fourth switches are switched 180 degrees out of phase with the second and third switches (see Fig. 1 and Fig. 2, where VG1 and VG3 correspond to the first and fourth switches of the Lin circuit discussed above and are switched 180 degrees of VG2 and VG4 which correspond to the second and third switches of the Lin circuit).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention incorporate the teachings of Yu in the method taught by the combination of Lin et al. and Esteves et al. in order to achieve a standard and well-known continuous mode of operation in a full-bridge circuit (see Yu, col. 1, lines 31-51)

***Allowable Subject Matter***

8. Claims 4-5 are allowed. Claims 18-19 are objected to for having minor informalities, however, would be allowable if the changes suggested by the examiner are made.

9. The following is an examiner's statement of reasons for allowance:

Relative to independent claims 4 and 18, the major difference between the teaching of the prior art of record (Lin, Estevez) and the instant invention is that the said prior art does not teach that the threshold brightness level corresponds to an intersection of an efficiency curve of the voltage inverter in the continuous mode and an efficiency curve of the voltage inverter in the burst mode.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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SS

29 December 2006

AMR A. AWAD  
SUPERVISORY PATENT EXAMINER  
